

Amendment to the Claims:

1. (Cancelled)

2. (Currently Amended) A transmission cable for use in a magnetic resonance apparatus which induces resonance at a magnetic resonance frequency, the transmission cable comprising:

a plurality of first cable segments; ~~segment~~; [[and]]

a second cable segment;

a third cable segment;

a first electroacoustic coupler which couples the first and second cable segments at a selectable signal frequency and which blocks common mode currents;

a second electroacoustic coupler which couples the second and third cable segments at the selectable signal frequency and which blocks common mode currents; and

a first mixer disposed at a first end of the cable for shifting [[a]] the selectable signal frequency associated with the electroacoustic couplers to enable the transmission of signals at difference frequencies other than the magnetic resonance frequency and inhibit unwanted cable heating.

3. (Currently Amended) [[A]] The transmission cable as set forth in claim 2 further comprising:

a second mixer disposed at a second end of the cable for shifting [[a]] the selectable signal frequency associated with the electroacoustic couplers.

4. (Currently Amended) A transmission cable for use in a magnetic resonance apparatus, the transmission cable comprising:

5 a plurality of cable segments[[: and]] including a first cable segment, a second cable segment, and a third cable segment, each of the plurality of segments having a length which is not a multiple of $\lambda/2$ where λ is a wavelength of a magnetic resonance frequency of the magnetic resonance apparatus;

a plurality of ~~electroacoustic~~electroacoustic couplers for providing electrical ~~an RF signal~~ connection between segments, including a first electroacoustic coupler coupling the first and second segments and a second electroacoustic coupler coupling the second and third segments;

wherein each cable segment comprises a first conductor and a second conductor and each of the first and second conductors is connected to at least one electroacoustic coupler.

5. (Currently Amended) A transmission cable ~~as set forth in claim 1 wherein~~ for use in a magnetic resonance apparatus, the transmission cable comprising:

at least three cable segments; and
5 a plurality of electroacoustic couplers which provide electrical connection between adjacent cable segments, each electroacoustic coupler comprises including:

a substrate;
a first set of conductive fingers disposed on the substrate; and
10 a second set of conductive fingers disposed on the substrate whereby an acoustic signal is passed from the first set of conductive fingers to the second set of conductive fingers.

6. (Cancelled)

7. (Currently Amended) ~~[[A]]~~ The MR apparatus as set forth in claim 6 claim 9, wherein the at least one transmission cable further comprises a first mixer disposed at a first end of the cable for shifting a signal frequency associated with the electroacoustic couplers.

8. (Currently Amended) ~~[[A]]~~ The MR apparatus as set forth in claim 7 wherein the at least one transmission cable further comprises a second mixer disposed at a second end of the cable for shifting a signal frequency associated with the electroacoustic couplers.

9. (Currently Amended) A MR apparatus ~~as set forth in claim 6 wherein comprising:~~

a first magnet system for generating a main magnetic field in an examination region;

an RF coil disposed in the examination region for transmitting and/or receiving RF signals to and/or from the examination region; and

a plurality of transmission cables for carrying signals with the MR system, at least one of the transmission cables comprising a plurality of at least three cable segments and a plurality of electroacoustic couplers for coupling adjacent cable segments, each cable segment comprises including a first conductor and a second conductor and each of the first and second conductors ~~[[is]]~~ being connected to at least one of the electroacoustic coupler couplers.

10. (Currently Amended) ~~[[A]]~~ The MR apparatus as set forth in ~~claim 6 claim 9,~~ wherein each electroacoustic coupler comprises:

a substrate;

a first set of conductive fingers disposed on the substrate; and

5 a second set of conductive fingers disposed on the substrate whereby an acoustic signal is passed from the first set of conductive fingers to the second set of conductive fingers.

11. (Cancelled)

12. (Currently Amended) A transmission cable ~~as set forth in claim 1~~ for use in a magnetic resonance apparatus the transmission cable comprising:

at least first, second, and third cable segments;

a first coupler which transforms a first signal carried by a first cable segment into a first acoustic signal and from the first acoustic signal into a second signal carried by a second cable segment; and

a second coupler which transforms the second signal carried by the second cable segment into a second acoustic signal and from the second acoustic signal into a third signal carried by the third cable segment;

wherein each coupler has a high impedance for a common mode wave on the cable.

13. (Currently Amended) ~~[[A]]~~ The transmission cable as set forth in ~~claim 11~~ claim 12, wherein the cable has a first end and a second end, wherein a mixer is disposed at each of the first and second ends for shifting a frequency of a signal transmitted by the cable.

14. (Currently Amended) An MR compatible catheter apparatus comprising:

a catheter;

a preamplifier; and

a transmission cable as set forth in ~~claim 1~~ claim 5 disposed between the catheter and the preamplifier.

15. (Currently Amended) An MR compatible catheter apparatus comprising:

a catheter;

a preamplifier; and

a transmission cable as set forth in ~~claim 11~~ claim 12 disposed between the catheter and the preamplifier.

16. (New) The transmission cable as set forth in claim 2, wherein none of the cable segments has a length which is a multiple of $\lambda/2$ where λ is a wavelength at the magnetic resonance frequency.

17. (New) The transmission cable as set forth in claim 16, wherein the cable segments are quarter λ segments.

18. (New) The MR apparatus as set forth in claim 9, wherein the cable segments are a quarter of a wavelength of the RF signals.